CHAPTER 7 – WATER RELIABILITY

7.1 OVERVIEW

The California Urban Water Management Planning Act (Act) requires urban water suppliers to assess water supply reliability that compares total projected water demand with the expected water supply over the next twenty years in five year increments. The Act also requires an assessment for a single dry year and multiple dry years. This chapter presents the reliability assessment for WFA's service area.

7.2 RELIABILITY OF IMPORTED SUPPLIES

WFA treats imported State Water Project (SWP) water purchased from the Metropolitan Water District and serves this water on a wholesale basis as a supplemental supply to the Cities of Chino, Chino Hills, Ontario and Upland and to the Monte Vista Water District.

Variability in SWP supplies has the potential to impact the ability of the agencies within WFA's service area to meet overall water supply needs. As part of the integrated water supply planning for the area, each agency is working in partnership with the Chino Basin Watermaster, Inland Empire Utilities Agency, and other water agencies within the Chino Basin to develop local water sources that will ensure overall supply reliability.

The amount of SWP available each year is dependent upon a number of factors such as hydrologic conditions in northern California, the amount of water in SWP storage reservoirs at the beginning of the year, legal and environmental issues, regulatory and operational constraints, and the total amount of water requested by contractors. Storage reservoirs help to make imported water available during low water months so that the amount of supply is not unduly impacted by the seasons. In addition, as described in Chapter 3, global warming may adversely impact the availability of SWP supplies in the future. Actions are being taken by MWD and the California Department of Water Resources to support the continued provision of reliable water supplies from the SWP.

As indicated above, MWD's 2010 Regional UWMP includes a comprehensive set of data analysis, and conclusions regarding the degrees to which various factors affect the availability and reliability of it s SWP and Colorado River supplies during normal, single-dry and multiple-dry year periods over the 20-year planning horizon and beyond. With specific regard to its SWP supplies, MWD provides extensive analysis based upon expert opinion and standards prepared by DWR in its 2009 SWP Delivery Reliability Report and other documentation concerning the SWP. Among other factors, DWR and MWD have

evaluated: the potential ongoing effects of climate change; SWRCB Decision D-1641; the most recent Biological Opinion prepared by the U.S. Fish & Wildlife Service concerning the effects of SWP operations on delta smelt; the most recent Biological Opinion prepared by the National Marine Fisheries Service regarding the effects of SWP operations on anadromous species; federal court litigation concerning those Biological Opinions; other endangered species of concern in the Delta; water quality concerns; new regulatory approaches for Delta operations; earthquake levee failure, and other potential emergency issues; and others. In full consideration and analysis of these and other factors having the potential to affect the availability and reliability of SWP supplies, MWD's 2010 Regional UWMP concludes it can meet the entire projected demands for imported water of its member agencies (including IEUA and hence WFA) during normal, single-dry and multiple-dry year periods over the 20-year planning projection and beyond. As provided by the UWMP Act, WFA is authorized to and does rely upon MWD's conclusions regarding SWP reliability, and incorporates MWD's analyses and conclusions in this UWMP. (Water Code section 10631(k).)

As a water wholesaler, MWD supplies imported water to WFA (through IEUA) to meet the water needs of its service area at the lowest possible cost. MWD's 2010 Integrated Regional Plan outlines how MWD has created a diverse resource portfolio and aggressive conservation program to protect the reliability of the entire system. MWD demonstrates that sufficient supplies can be reasonably relied upon to meet projected supplemental demands. The report references MWD's Comprehensive Supplemental Supply Plan, which if implemented, would provide MWD with the capability to reliably meet projected supplemental water demands through 2030. In its Regional Urban Water Management Plan (November, 2010), MWD also describes its supply availability at the regional level. The Regional Urban Water Management Plan developed by MWD assures the reliability of full service imported water supply to its member agencies through a multiple-year drought or single dry year through 2035. As indicated above, WFA relied upon this assurance in the development of this Plan.

7.3 RELIABILITY DURING A DROUGHT

The available supplies and water demands for WFA's service area were analyzed to assess the region's ability to satisfy demands during three scenarios: a normal water year, single dry year, and multiple dry years. Consistent with the MWD 2010 Regional UWMP and IEUA 2010 Urban Water Management Plan, it is expected that WFA's service area will be able to meet 100 percent of its dry year demand under every scenario.

The following Table 7-1 presents the supply reliability, as percentages of normal water year supplies, for the WFA area during normal, single dry, and multiple dry water years.

Table 7-1
Supply Reliability as Percentage of Normal Water Year Supply

			Multiple Dry Water Years[2]		
	Normal Water Year	Single Dry Water Year	Year 1	Year 2	Year3
Groundwater	100%	117%	118%	117%	117%
Recycled Water	100%	100%	100%	105%	110%
Surface Water[1]	100%	31%	49%	84%	77%
Imported Water	100%	55%	54%	54%	55%

Notes:

(1) Estimated decrease in surface water availability per Prado region 1970-2003 rainfall data. Surface water does not constitute a significant portion of the water supply.

(2) Chino Basin Dry-Year Yield (DYY) Program facilities provide for 100,000 AF of storage and 33,000 AFY of additional groundwater production for use in-lieu of Imported Water during dry years. The DYY Program is in effect during dry years between 2008 and 2025. Percentages reflect decrease in imported water and associated increase in groundwater production. From Metropolitan Water District's (MWD) 2010 UWMP. Metropolitan has documented the capability to reliably meet 100 percent of projected supplemental water demands through 2035.

(3) MWD's 2010 UWMP provides information for three consecutive dry years.

The historical basis for the supply reliability data is presented in Table 7-2, which summarizes the base years for normal, single dry, and multiple dry water years.

Table 7-2
Basis of Water Year Data

Water Year Type	Base Year(s)	Historical Sequence
Normal Water Year	FY 2004	1922-2004[2]
Single Dry Water Year[1]	1977[2]	
Multiple Dry Water Years[1]	1990-1992[2]	

Notes:

(1) Rainfall data from Prado region (1970-2003) used as basis for surface water reliability.

(2) From MWD's Draft UWMP (Sept 2005).

The following subsections describe the region's water supply and demand during each of the three scenarios for the next twenty years.

Normal Water Year

The area's water supply is broken down into four categories: groundwater, recycled water, surface water, and imported water. With emphasis on local water supply development within WFA's service area, including an increase in the availability of recycled water, it is anticipated that WFA's member agencies will not need additional imported water supplies above existing deliveries. As summarized in Table 7-5, it is projected that 100 percent of local and imported supplies will be available to meet the WFA's service area demands during a normal water year.

The following Table 7-3 presents the projected water supply available to WFA's service area during a normal year.

Table 7-3
Projected Normal Year Water Supply[1] (AFY)

Supply	2010	2015	2020	2025	2030	2035
Groundwater[2]	106,876	122,872	128,578	134,483	139,922	149,825

Recycled Water	15,030	18,941	21,532	23,979	26,426	30,023
Surface Water	8,034	8,290	8,290	8,290	8,290	8,290
Imported Water	28,792	47,187	48,272	49,356	50,440	52,609
% of Normal Year[3]						
Groundwater	133%	153%	160145%	168%	232%	271%
Recycled Water	1420%	1791%	2035%	2266%	2498%	2838%
Surface Water	669%	690%	690%	690%	690%	690%
Imported Water	68%	111%	113%	116%	118%	123%

Notes:
(1) Assumes zero conservation.
(2) Includes groundwater from Chino Basin (inc. CDA supply) and other basins.
(3) From Table 7-2.

Table 7-4 summarizes the WFA service area's demands during a normal year over the next twenty-five years. It is estimated that water demands will increase to approximately 179,000 AF by the year 2035. However, as additional recycled water supplies become available and local agencies connect to the recycled water system, the region's dependability on imported water supplies will decrease.

Table 7-4
Projected Normal Year Water Demand (AFY)

	2010	2015	2020	2025	2030	2035
Demand	131,329	147,310	147,530	156,992	164,007	179,809
% of Year 2005	123%	112%	112%	120%	125%	137%

The comparison between supply and demand for a normal water year is presented in Table 7-5. In a normal year, zero water conservation has been assumed, providing a more conservative assessment of the region's supplies. The region is expected to meet 100 percent of water demands through the year 2035, with an annual surplus ranging from approximately 50,000 to 60,000 AF.

Table 7-5
Projected Normal Year Supply and Demand Comparison (AFY)

	2010	2015	2020	2025	2030	2035
Supply Totals	131,329	197,290	206,671	216,108	225,078	240,747
Demand Totals	131,329	147,310	147,530	156,992	164,007	179,809
Difference (Supply minus Demand)	0	49,980	59,141	59,116	61,071	60,938
Difference as % of Supply	0%	25%	29%	27%	27%	25%
Difference as % of Demand	0%	34%	40%	38%	37%	34%

Single Dry Year

The water demands and supplies for WFA's service area over the next twenty years were analyzed in the event that a single dry year occurs, similar to the drought that

occurred in California in 1977[1]. The development of groundwater storage, recycled water systems, surface water supplies, and improvements in water quality and conservation, will greatly reduce the need for imported water supplies during dry years. The following paragraphs describe the available water supply to WFA's service area:

Groundwater

Groundwater supplies represent a significant supplemental source of water for water agencies within WFA's service area. The majority of groundwater is produced from the Chino Basin with additional water produced from other local groundwater basins. The Chino Basin is the largest groundwater basin in the Upper Santa Ana Watershed, currently containing 5,000,000 AF of water in storage with an unused storage capacity of approximately 1,000,000 AF. Water rights within the Chino Basin have been adjudicated and the average safe-yield of the Basin is 140,000 AFY. The legal and mandated framework in place for the Chino Basin provides that when over-pumping is required during a single dry year event, additional groundwater pumped beyond the safe yield of the Basin will be replenished during wet or normal years with imported water purchased from the Metropolitan Water District of Southern California (MWD) and with supplemental water from recycled and/or surface supplies.

The Chino Basin Watermaster (Watermaster), in partnership with IEUA and MWD have developed the Chino Basin Dry-Year Yield Program (DYY Program) to help alleviate demands on imported water during dry years by pumping additional groundwater. Three Valleys Municipal Water District is also a signatory to the Program. The DYY Program is the first step in a phased plan to develop and implement a comprehensive conjunctive use program to allow maximum use of imported water available during wet years and stored groundwater in the Chino Basin during dry years. Imported water deliveries to participants would increase during wet or normal (or "put") years, and purchase of imported water would decrease during dry (or "take") years. Collectively, the eight DYY participants, five of which are member agencies of WFA, would meet predetermined amounts to achieve a 25,000 AFY "put" and a 33,000 AFY "take". Each of the local retail agencies volunteered to produce excess groundwater during a dry year in-lieu of normal imported water deliveries. In exchange, they received funding for new groundwater treatment and well facilities that would allow excess groundwater production during dry years. Overall imported water demands within WFA's service area during dry years would decrease by 17,647 acre-feet per year, which equals the portion of the 33,000 acre-feet per year of the DYY shift obligation for WFA's member agencies, as shown in Table 7-6.

[1] MWD's 2010 RUWMP, NOVEMBER 2010.

Table 7-6
Participating Agencies DYY Shift Obligations
(WFA member agencies in italics)

Local Retail Agency	DYY Program Shift Obligation (AFY)
City of Chino	*1,159*
City of Chino Hills	*1,448*
Cucamonga Valley Water District	11,353
Jurupa Community Services District(1)	2,000
Monte Vista Water District	*3,963*
City of Ontario	*8,076*
City of Pomona(1)	2,000
City of Upland	*3,001*
Total	**33,000**

Notes:
(1) Agencies not within the IEUA service area.

During dry years when the DYY Program is active, groundwater production will increase to approximately 117 percent of a normal year.

Recycled Water

Recycled water is becoming an increasingly important source of local water for the region. Recycled water is a critical component of the Optimum Basin Management Plan (OBMP), developed in 2000, to address water quality issues in the Chino Basin. Current direct reuse of recycled water with in the WFA service area is approximately 15,000 AFY and is expected to increase to nearly 30,000 AF by 2035. During a single dry year, it has been assumed that recycled water will be 100 percent reliable.

Imported Water

Southern California expects to have a reliable water supply for the foreseeable future due to the integrated resources planning effort of the MWD and its member agencies. As a water wholesaler, MWD supplies imported water to IEUA to meet the water needs of its service area at the lowest possible cost. MWD's Draft 2010 Integrated Regional Plan establishes the framework for the policies, projects and programs that will ensure that Southern California has an adequate and reliable water supply for our future residential, commercial and environmental needs. The proposed 2010 IRP is an adaptive resources management plan that can change in response to the many challenges and uncertainties facing the regional water supply. The proposed 2010 IRP strategies focus on three key components: core resources, supply buffer and foundational actions.[2]

As a result, during a single dry year event, MWD will have the resources to supply IEUA with 100 percent of their imported water demands. However, as discussed previously, with the DYY Program in effect, as well as the MWD Water Supply Allocation Plan (WSAP), several of IEUA's member agencies will reduce their imported water demand by their DYY Program shift and allocation, thus reducing demands on Metropolitan. During

[2] MWD's 2010 IRP, JULY 2010

a dry year, imported water demands are expected to decrease to approximately 58 percent.

Tables 7-7 through 7-9 summarize the projected single dry year water supply and demand for the years 2010 through 2035.

Table 7-7
Projected Single Dry Year Water Supply (AFY)

Supply	2015	2020	2025	2030	2035
Groundwater	141,303	147,865	154,655	160,910	172,299
Recycled Water	18,941	21,532	23,979	26,426	30,023
Surface Water	2,570	2,570	2,570	2,570	2,570
Imported Water	25,953	26,549	27,146	27,742	28,935
% of Normal Year					
Groundwater	115%	115%	115%	115%	115%
Recycled Water	100%	100%	100%	100%	100%
Surface Water	31%	31%	31%	31%	31%
Imported Water	55%	55%	55%	55%	55%

Notes:
(1) Projected normal use from Table 7-3.

Table 7-8
Projected Single Dry Year Water Demand (AFY)

	2015	2020	2025	2030	2035
Demand	147,310	147,530	156,992	164,007	179,809
Conservation[(1)]	-14,731	-14,753	-15,699	-16,401	-17,981
Adjusted Demand	132,579	132,777	141,293	147,606	161,828
% of Projected Normal[(2)]	90%	90%	90%	90%	90%

Notes:
(1) Assumed 10% conservation of demand for single dry years.
(2) Projected Normal Use from Table 7-4.

Table 7-9
Projected Single Dry Year Supply and Demand Comparison (AFY)

	2015	2020	2025	2030	2035
Supply Totals	188,767	198,516	208,350	217,648	233,827
Demand Totals	132,579	132,777	141,293	147,606	161,828
Difference (Supply minus Demand)	56,188	65,739	67,057	70,042	71,999
Difference as % of Supply	30%	33%	32%	32%	31%
Difference as % of Demand	42%	50%	47%	47%	44%

Multiple Dry Years

The water demands and supplies for WFA's service area over the next twenty years were analyzed in the event that a multiple dry year occurs, similar to the drought that

occurred during the years 1990-1992[3]. The following paragraphs describe the available water supply to WFA during a multiple dry year period.

Groundwater

Similar to the Single Dry Year scenario described previously, implementing the DYY Program requires local retail agencies to produce additional groundwater in-lieu of accepting imported water deliveries. Each agency pumps additional groundwater in the amount of their shift obligation. Production in excess of the safe yield of the Basin is replaced with replenishment water during wet or normal years. With the DYY Program in place, groundwater has been assumed to be approximately 117 percent reliable during dry years.

Recycled Water

During multiple dry years, the use of recycled water for irrigation and other purposes helps reduce overall water demands. It has been assumed that during multiple dry years, the production of recycled water will gradually increase from 100 percent during the first dry year to 105 and 110 percent, respectively, during the next two subsequent dry years as more customers become connected to the recycled water system.

Imported Water

During multiple dry years, local agencies reduce their imported water demands by increasing groundwater production in accordance with the DYY Program. The DYY Program reduces imported water demands by approximately 53 percent within WFA's service area, thereby conserving Metropolitan's supplies during a drought.

The following Tables 7-10 through 7-24 summarize the projected multiple dry year water supply and demand for five-year periods during the years 2010 through 2035. Each five year period is contains three consecutive dry years where the DYY Program and conservation programs are implemented.

Tables 7-10 through 7-12: 2011-2015

Table 7-10
Projected Supply During Multiple Dry Year Period Ending in 2015 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
Supply[1]	**2011**	**2012**	**2013[2]**	**2014[2]**	**2015[2]**
Groundwater	110,075	113,274	135,109	137,624	140,074
Recycled Water	15,812	16,594	17,377	19,067	20,835
Surface Water	8,085	8,136	4,012	6,921	6,383
Imported Water	32,471	36,150	23,898	26,540	29,256
% of Projected Normal[3]					
Groundwater	100%	100%	116%	115%	114%

[3] MWD's UWMP (Nov 2010)

Recycled Water	100%	100%	100%	105%	110%
Surface Water	100%	100%	49%	84%	77%
Imported Water	100%	100%	60%	61%	62%

Notes:
(1) Supply values extrapolated from 2010 and 2015 data.
(2) DYY Program assumed to begin in year 2008 according to the Master Agreement. DYY Program in effect during multiple dry years.
(3) Projected Normal Use from Table 7-3.

Table 7-11
Projected Demand During Multiple Dry Year Period Ending in 2015 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2011	**2012**	**2013**	**2014**	**2015**
Demand	134,525	137,721	140,918	144,114	147,310
Conservation[(1)]	0	0	-14,092	-14,411	-14,731
Adjusted Demand	134,525	137,721	126,826	129,702	132,579
% of Projected Normal[(2)]	100%	100%	90%	90%	90%

Notes:
(1) Assumed 10% conservation of demand for dry years. Refer to Chapter 4, Water Conservation Program.
(2) Projected Normal Use from Table 7-4.

Table 7-12
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2015 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2011	**2012**	**2013**	**2014**	**2015**
Supply Totals	166,444	174,155	180,395	190,151	196,549
Demand Totals	134,525	137,721	126,826	129,702	132,579
Difference (Supply minus Demand)	31,918	36,434	53,570	60,449	63,970
Difference as % of Supply	19%	21%	30%	32%	33%
Difference as % of Demand	24%	26%	42%	47%	48%

Tables 7-13 through 7-15: 2011-2015

Table 7-13
Projected Supply During Multiple Dry Year Period Ending in 2020 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
Supply[(1)(2)]	**2016**	**2017**	**2018**	**2019**	**2020**
Groundwater	124,013	125,154	146,503	146,552	146,579
Recycled Water	19,459	19,977	20,495	22,064	23,685
Surface Water	8,290	8,290	4,062	6,964	6,383
Imported Water	47,404	47,621	28,703	29,313	29,928
% of Projected Normal[(3)]					
Groundwater	100%	100%	116%	115%	114%

Recycled Water	100%	100%	100%	105%	110%
Surface Water	100%	100%	49%	84%	77%
Imported Water	100%	100%	60%	61%	62%

Notes:
(1) Supply values extrapolated from 2015and 2020 data.
(2) DYY Program assumed to begin in year 2008 according to the Master Agreement. DYY Program in effect during multiple dry years.
(3) Projected Normal Use from Table 7-3.

Table 7-14
Projected Demand During Multiple Dry Year Period Ending in 2020 (AFY)

	(normal)	(dry)	(dry)	(dry)	(normal)
	2016	**2017**	**2018**	**2019**	**2020**
Demand	147,354	147,398	147,442	147,486	147,530
Conservation[1]	0	0	-14,744	-14,749	-14,753
Adjusted Demand	147,354	147,398	132,698	132,737	132,777
% of Projected Normal[2]	100%	100%	90%	90%	90%

Notes:
(1) Assumed 10% conservation of demand for multiple dry years.
(2) Projected Normal Use from Table 7-4.

Table 7-15
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2020 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2016	**2017**	**2018**	**2019**	**2020**
Supply Totals	199,166	201,043	199,763	204,894	206,576
Demand Totals	147,354	147,398	132,698	132,737	132,777
Difference (Supply minus Demand)	51,812	53,645	67,065	72,156	73,799
Difference as % of Supply	26%	27%	34%	35%	36%
Difference as % of Demand	35%	36%	51%	54%	56%

Tables 7-16 through 7-18: 2021-2025

Table 7-16
Projected Supply During Multiple Dry Year Period Ending in 2025 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
Supply[1][2]	**2021**	**2022**	**2023**	**2024**	**2025**
Groundwater	129,759	130,940	153,260	153,297	153,311
Recycled Water	22,021	22,511	23,000	24,664	26,377
Surface Water	8,290	8,290	4,062	6,964	6,383
Imported Water	48,489	48,705	29,353	29,975	30,601
% of Projected Normal[3]					
Groundwater	100%	100%	116%	115%	114%

Recycled Water	100%	100%	100%	105%	110%
Surface Water	100%	100%	49%	84%	77%
Imported Water	100%	100%	60%	61%	62%

Notes:
(1) Supply values extrapolated from 2020 and 2025 data.
(2) DYY Program assumed to begin in year 2008 according to the Master Agreement. DYY Program in effect during multiple dry years.
(3) Projected Normal Use from Table7-3.

Table 7-17
Projected Demand During Multiple Dry Year Period Ending in 2025 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2021	**2022**	**2023**	**2024**	**2025**
Demand	149,422	151,315	153,207	155,100	156,992
Conservation[(1)]	0	0	-15,321	-15,510	-15,699
Adjusted Demand	149,422	151,315	137,886	139,590	141,293
% of Projected Normal[(2)]	100%	100%	90%	90%	90%

Notes:
(1) Assumed 10% conservation of demand for multiple dry years.
(2) Projected Normal Use from Table 7-4.

Table 7-18
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2025 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2021	**2022**	**2023**	**2024**	**2025**
Supply Totals	208,559	210,446	209,676	214,900	216,671
Demand Totals	149,422	151,315	137,886	139,590	141,293
Difference (Supply minus Demand)	59,136	59,131	71,789	75,310	75,378
Difference as % of Supply	28%	28%	34%	35%	35%
Difference as % of Demand	40%	39%	52%	54%	53%

Tables 7-19 through 7-21: 2026-2030

Table 7-19
Projected Supply During Multiple Dry Year Period Ending in 2030 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
Supply[(1)(2)]	**2026**	**2027**	**2028**	**2029**	**2030**
Groundwater	135,571	136,659	159,786	159,659	159,511
Recycled Water	24,468	24,957	25,447	27,233	29,068
Surface Water	8,290	8,290	4,062	6,964	6,383
Imported Water	49,573	49,790	30,004	30,636	31,273
% of Projected Normal[(3)]					

Groundwater	100%	100%	116%	115%	114%
Recycled Water	100%	100%	100%	105%	110%
Surface Water	100%	100%	49%	84%	77%
Imported Water	100%	100%	60%	61%	62%

Notes:
(1) Supply values extrapolated from 2025and 2030 data.
(2) DYY Program assumed to begin in year 2008 according to the Master Agreement. DYY Program in effect during multiple dry years.
(3) Projected Normal Use from Table 7-3.

Table 7-20
Projected Demand During Multiple Dry Year Period Ending in 2030 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2026	**2027**	**2028**	**2029**	**2030**
Demand	158,395	159,798	161,201	162,604	164,007
Conservation[(1)]	0	0	-16,120	-16,260	-16,401
Adjusted Demand	158,395	159,798	145,081	146,344	147,606
% of Projected Normal[(2)]	100%	100%	90%	90%	90%

Notes:
(1) Assumed 10% conservation of demand for multiple dry years.
(2) Projected Normal Use from Table 7-4.

Table 7-21
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2030 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2026	**2027**	**2028**	**2029**	**2030**
Supply Totals	217,902	219,696	219,299	224,492	226,236
Demand Totals	158,395	159,798	145,081	146,344	147,606
Difference (Supply minus Demand)	59,507	59,898	74,218	78,149	78,629
Difference as % of Supply	27%	27%	34%	35%	35%
Difference as % of Demand	38%	37%	51%	53%	53%

Tables 7-22 through 7-24: 2031-2035

Table 7-22
Projected Supply During Multiple Dry Year Period Ending in 2035 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
Supply[(1)(2)]	**2031**	**2032**	**2033**	**2034**	**2035**
Groundwater	141,903	143,883	169,202	170,021	170,801
Recycled Water	27,145	27,865	28,584	30,769	33,026
Surface Water	8,290	8,290	4,062	6,964	6,383
Imported Water	50,874	51,308	31,045	31,827	32,618
% of Projected Normal[(3)]					

Groundwater	100%	100%	116%	115%	114%
Recycled Water	100%	100%	100%	105%	110%
Surface Water	100%	100%	49%	84%	77%
Imported Water	100%	100%	60%	61%	62%

Notes:
(1) Supply values extrapolated from 2030 and 2035 data.
(2) DYY Program assumed to begin in year 2008 according to the Master Agreement. DYY Program in effect during multiple dry years.
(3) Projected Normal Use from Table 7-3.

Table 7-23
Projected Demand During Multiple Dry Year Period Ending in 2035 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2031	**2032**	**2033**	**2034**	**2035**
Demand	167,167	170,328	173,488	176,649	179,809
Conservation[(1)]	0	0	-17,349	-17,665	-17,981
Adjusted Demand	167,167	170,328	156,139	158,984	161,828
% of Projected Normal[(2)]	100%	100%	90%	90%	90%

Notes:
(1) Assumed 10% conservation of demand for multiple dry years.
(2) Projected Normal Use from Table 7-4.

Table 11-24
Projected Supply and Demand Comparison During Multiple Dry Year Period Ending in 2035 (AFY)

	(normal)	(normal)	(dry)	(dry)	(dry)
	2031	**2032**	**2033**	**2034**	**2035**
Supply Totals	228,212	231,346	232,893	239,581	242,827
Demand Totals	167,167	170,328	156,139	158,984	161,828
Difference (Supply minus Demand)	61,044	61,018	76,754	80,597	80,999
Difference as % of Supply	27%	26%	33%	34%	33%
Difference as % of Demand	37%	36%	49%	51%	50%

7.4 WATER AGENCY INTERCONNECTION

Several local agencies have had the ability to provide neighbor agencies with water supplies during periods of extraordinary high demand or temporary disruptions in imported supply. Other agencies provide water supplies to other agencies as a matter of routine business. These interconnections are extremely important because the ability to move water around the Chino Basin provides an important level of supply reliability for agencies within WFA's service area.

Current interconnections include the Monte Vista Water District which provides an annual supplementary water supply to the City of Chino Hills. This totals as much as 10,000 acre-feet each year. Additional important interconnections have been

established between the City of Ontario and the City of Chino as well as between the Chino Desalter Authority and cities served within WFA's service area.

7.5 MWD SERVICE LINE CAPITAL IMPROVEMENTS

The WFA service area is supplied imported water solely through the Rialto Feeder, making the service susceptible to emergency interruptions. This was evident in June 2004 when MWD had to conduct an unplanned shutdown of the Rialto Feeder to make emergency repairs. Agencies served by WFA suffered as much as 50% loss of supply for one week while MWD conducted repair operations.

MWD recognized the vulnerability of the pipeline to disruption and worked with WFA, IEUA and other agencies to identify key points along the Rialto Feeder where isolation valves have been installed. These valves contribute to a greater level of future reliability for agencies served by this pipeline. In the event of a break in the Rialto Feeder, only a portion of the pipeline may need to be shutdown instead of closing down the approximately 30 miles of line from Devils Canyon Forebay to LaVerne. Interconnections and mutual aid agreements will also help ensure that there are adequate supplies during an emergency.

7.6 MUTUAL AID AGREEMENTS

The cities of Chino, Chino Hills, Montclair, Ontario and Upland and the Inland Empire Utilities Agency and the Monte Vista Water District have a Mutual Aid Agreement that, in the event of any disruption of damage to the ability of either IEUA or the other agencies to provide the public or their customers water service, sewage service or sewage treatment service, the other parties will cooperate to the maximum extent possible to provide mutual aid assistance as requested.